AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the

application:

LISTING OF CLAIMS:

1. (currently amended): A method for determining the influencing of the state of

polarization of optical radiation by an optical system, comprising

directing entrance-side radiation with a defined entrance state of polarization onto the

optical system,

measuring the exit state of polarization by radiation emerging from the optical system,

and

determining the influencing of the state of polarization by the optical system by means of

evaluating the measured exit state of polarization with reference to the entrance state of

polarization,

wherein the influencing of the state of polarization caused by the optical system of

prescribable aperture is determined with pupil resolution; and

wherein an associated ellipsometric measurement is carried out;

wherein the optical system is a microlithography objective.

2. (previously presented): A method according to Claim 1, wherein the defined entrance

state of polarization is provided in an object plane of the optical system, and the exit state of

polarization is measured with pupil resolution within a prescribable pupil range of the optical

system.

3. (currently amended): ~~A method according to Claim 1,~~ A method for determining the

influencing of the state of polarization of optical radiation by an optical system, comprising

directing entrance-side radiation with a defined entrance state of polarization onto the

optical system,

measuring the exit state of polarization by radiation emerging from the optical system,

and

determining the influencing of the state of polarization by the optical system by means of

evaluating the measured exit state of polarization with reference to the entrance state of

polarization,

wherein the influencing of the state of polarization caused by the optical system of

prescribable aperture is determined with pupil resolution;

wherein an associated ellipsometric measurement is carried out; and

wherein a spatially incoherent point light radiation emanating from the object plane of the

optical system is provided as entrance-side radiation.

4. (previously presented): A method according to Claim 1, wherein evaluating the

measured exit state of polarization includes a determination of the phase-reduced Jones matrix.

5. (currently amended): ~~A method according to Claim 1,~~ A method for determining the

influencing of the state of polarization of optical radiation by an optical system, comprising

directing entrance-side radiation with a defined entrance state of polarization onto the

optical system,

measuring the exit state of polarization by radiation emerging from the optical system,

and

determining the influencing of the state of polarization by the optical system by means of

evaluating the measured exit state of polarization with reference to the entrance state of

polarization,

wherein the influencing of the state of polarization caused by the optical system of

prescribable aperture is determined with pupil resolution; and

wherein directing entrance side radiation with the defined entrance state of polarization,

measuring the exit state of polarization and evaluating the measured exit state of polarization

include a shearing interferometric measurement or a point diffraction interferometric

measurement.

6. (original): A method according to Claim 5, wherein the result of the shearing

interferometric measurement or of the point-diffraction interferometric measurement is subjected

to a downstream polarization analysis.

7. (withdrawn): A method for image correction, wherein the distortion of a pupil image by an optical imaging system of prescribable aperture is determined by at least one of optical computation and measurement acquisition, and is corrected computationally.

8. (previously presented): An apparatus for determining the influencing of the state of polarization of optical radiation by an optical system, comprising:

means for providing entrance-side radiation, directed onto the optical system, with a defined entrance state of polarization,

polarization detector means for measuring the exit state of polarization of radiation emerging from the optical system, and

an evaluation unit for determining the influencing of the state of polarization by the optical system by means of evaluating the measured exit state of polarization with reference to the entrance state of polarization,

wherein

the polarization detector means is configured to measure the exit state of polarization with pupil resolution;

the evaluation unit is configured to determine the influencing of the state of polarization with pupil resolution;

the means for providing the entrance-side radiation includes a perforated mask in an object plane of the optical system and a first polarization means, upstream from the perforated mask; and

the first polarization means includes a polarizer unit and/or a compensator unit in

serial arrangement, which can be set to various spatial orientations.

9. (cancelled).

10. (cancelled).

11. (currently amended): An apparatus according to Claim ~~9~~8, wherein the means for

providing the entrance-side radiation includes a diffusing screen in front of the first polarization

means.

12. (previously presented): An apparatus according to Claim 8, wherein the polarization

detector means includes a CCD detector and a second polarization means, upstream from the

CCD detector.

13. (previously presented): ~~An apparatus according to Claim 8,~~ An apparatus for

determining the influencing of the state of polarization of optical radiation by an optical system,

comprising:

means for providing entrance-side radiation, directed onto the optical system, with a

defined entrance state of polarization,

polarization detector means for measuring the exit state of polarization of radiation

emerging from the optical system, and

an evaluation unit for determining the influencing of the state of polarization by the

optical system by means of evaluating the measured exit state of polarization with reference to

the entrance state of polarization,

wherein

the polarization detector means is configured to measure the exit state of

polarization with pupil resolution;

the evaluation unit is configured to determine the influencing of the state of

polarization with pupil resolution;

the means for providing the entrance-side radiation includes a perforated mask in

an object plane of the optical system and a first polarization means, upstream from the

perforated mask; and

the first polarization means includes a polarizer unit and/or a compensator unit in

serial arrangement, which can be set to various spatial orientations

wherein the polarization detector means includes a shearing interferometer unit or

a point-diffraction interferometry unit.

14. (original): An apparatus according to Claim 8, wherein the evaluation unit is

configured for determining the phase-reduced or complete, pupil-resolved Jones matrix.

15. (withdrawn): A polarization analyser arrangement comprising the following

elements arranged one after another in the beam path:

a periodic structure,

a beam-shaping unit,

a compensator polarizer unit, and

a polarization analyser element.

16. (withdrawn): The polarization analyser arrangement according to Claim 15, wherein the polarization analyser element comprises a polarization beam splitter element.

17. (withdrawn): A polarization analyser arrangement according to Claim 15, wherein the beam shaping unit comprises at least one optical element selected from the group consisting of: at least one spherical refractive lens, at least one aspheric refractive lens, at least one diffractive lens , at least one spherical mirror element, and at least one aspheric mirror element.

18. (withdrawn): A polarization analyser arrangement according to Claim 15, further comprising a detector element coupled to the periodic structure and arranged after the polarization analyser element, wherein the periodic structure moves laterally with the detector element.

19. (withdrawn): A polarization analyser arrangement according to Claim 15, further comprising a detector element coupled to the periodic structure and arranged after the polarization analyser element, wherein the periodic structure moves laterally relative to the detector element.

20. (withdrawn): A polarization analyser arrangement according to Claim 15,

configured as a polarization detector means on the image side of an optical imaging sys-tem to

be tested.

21. (withdrawn): A polarization analyser arrangement according to Claim 15,

configured as a polarization preparation means on the object side of an optical imaging system to

be tested.

22. (withdrawn): A polarization analyser arrangement comprising the following

elements arranged one behind another in the beam path:

a beam-shaping unit,

a compensator polarizer unit which comprises a plurality of compensator elements which

are fixedly arranged with directions of polarization rotated relative to one another, and

a polarization analyser element.

23. (withdrawn): The polarization analyser arrangement according to Claim 22, wherein

the polarization analyser element comprises a polarization beam splitter element.

24. (withdrawn): A polarization analyser arrangement according to Claim 22, wherein

the beam shaping unit comprises at least one optical element selected from the group consisting

of: at least one spherical refractive lens, at least one aspheric refractive lens, at least one

diffractive lens , at least one spherical mirror element, and at least one aspheric mirror element.

25. (withdrawn): A polarization analyser arrangement according to Claim 22,

configured as a polarization detector means on the image side of an optical imaging sys-tem to

be tested.

26. (withdrawn): A polarization analyser arrangement according to Claim 22,

configured as a polarization preparation means on the object side of an optical imaging system to

be tested.

27. (cancelled).

28. (previously presented): A method for determining the influencing of the state of

polarization of optical radiation by an optical system, comprising:

directing entrance-side radiation with a defined en-trance state of polarization onto the

optical system,

measuring the exit state of polarization by radiation emerging from the optical system,

and

determining the influencing of the state of polarization by the optical system by means of

evaluating the measured exit state of polarization with reference to the entrance state of

polarization,

wherein the influencing of the state of polarization caused by the optical system of

prescribable aperture is determined with pupil resolution; and

wherein a spatially incoherent point light radiation emanating from the object plane of the

optical system is provided as entrance-side radiation.

29. (previously presented): A method according to Claim 28, wherein the defined

entrance state of polarization is provided in an object plane of the optical system, and the exit

state of polarization is measured with pupil resolution within a prescribable pupil range of the

optical system

30. (previously presented): A method according to Claim 28, wherein evaluating the

measured exit state of polarization includes a determination of the phase-reduced Jones matrix;

and

an associated ellipsometric measurement is carried out.

31. (currently amended): ~~A method according to Claim 28,~~ A method for determining

the influencing of the state of polarization of optical radiation by an optical system, comprising:

directing entrance-side radiation with a defined en-trance state of polarization onto the

optical system,

measuring the exit state of polarization by radiation emerging from the optical system,

and

determining the influencing of the state of polarization by the optical system by means of

evaluating the measured exit state of polarization with reference to the entrance state of

polarization,

wherein the influencing of the state of polarization caused by the optical system of

prescribable aperture is determined with pupil resolution;

wherein a spatially incoherent point light radiation emanating from the object plane of the

optical system is provided as entrance-side radiation; and

wherein directing entrance side radiation with the defined entrance state of polarization,

measuring of the exit state of polarization and evaluating the measured exit state of polarization

include a shearing interferometric measurement or a point diffraction interferometric

measurement.

32. (previously presented): A method according to Claim 31, wherein the result of the

shearing interferometric measurement or of the point-diffraction interferometric measurement is

subjected to a downstream polarization analysis.

33. (previously presented): An apparatus for determining the influencing of the state of

polarization of optical radiation by an optical system, comprising:

means for providing entrance-side radiation, directed onto the optical system, with a de-

fined entrance state of polarization,

polarization detector means for measuring the exit state of polarization of radiation

emerging from the optical system, and

an evaluation unit for determining the influencing of the state of polarization by the

optical system by means of evaluating the measured exit state of polarization with reference to

the entrance state of polarization,

wherein

the polarization detector means are configured to measure the exit state of

polarization with pupil resolution;

the evaluation unit is configured to determine the influencing of the state of

polarization with pupil resolution; and

the means for providing the entrance-side radiation includes a perforated mask in

an object plane of the optical system and a first polarization means, upstream of the

perforated mask.

34. (previously presented): An apparatus according to Claim 33, wherein the means for

providing the entrance-side radiation includes a diffusing screen in front of the first polarization

means.

35. (previously presented): An apparatus according to Claim 33, wherein the

polarization detector means includes a CCD detector and a second polarization means upstream

from the CCD detector.

36. (previously presented): ~~An apparatus according to Claim 33,~~ An apparatus for

determining the influencing of the state of polarization of optical radiation by an optical system,

comprising:

means for providing entrance-side radiation, directed onto the optical system, with a de-

fined entrance state of polarization,

polarization detector means for measuring the exit state of polarization of radiation

emerging from the optical system, and

an evaluation unit for determining the influencing of the state of polarization by the

optical system by means of evaluating the measured exit state of polarization with reference to

the entrance state of polarization,

wherein

the polarization detector means are configured to measure the exit state of

polarization with pupil resolution;

the evaluation unit is configured to determine the influencing of the state of

polarization with pupil resolution; and

the means for providing the entrance-side radiation includes a perforated mask in

an object plane of the optical system and a first polarization means, upstream of the

perforated mask; and

~~wherein~~ the polarization detector means includes a shearing interferometer unit or

a point-diffraction interferometry unit.

37. (previously presented): An apparatus according to Claim 33, wherein the evaluation

unit is configured for determining the phase-reduced or complete, pupil-resolved Jones matrix.